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THE ELEMENTARY SCHOOL TEACHER

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EDUCATIONAL NEWS AND EDITORIAL COMMENT

Departmental Teaching

The Bureau of Education recently conducted an inquiry regarding the prevalence of departmental teaching in the elementary school and the conclusions as to its value reached by those who have had experience with this type of organization. The following table presents the summary of the answers received from cities of 5,000 population and over. All told, there are 813 replies, distributed in the fashion indicated in the table. Following the table there are eighteen typical comments which are copied from the reports indicating the attitude of various workers in the field.

	Departmental Teaching		Is the Percentage of Failures Less?			Do a Larger Percentage Enter High School?			Are Pupils Better Able to Do High-School Work?		
	Yes	No	Yes	No	No Data	Yes	No	No Data	Yes	No	No Data
Total.....	461	352	240	78	143	250	61	150	302	34	125

1. Succeeds with the strong and industrious pupils and fails with the weak and lazy.

2. Tends to develop independence and self-reliance.

3. Danger of teachers making their subjects of more importance than their pupils.

4. Have had departmental teaching since 1896–97 and have found that it is more economical; that it requires pupils to be independent of the teacher; that they are better able to express their ideas, and that promotion can be made by subject.

5. English should be distributed among the different teachers so that it may be co-ordinated with other subjects.

6. Better teaching and discipline; more interest; less loss between grades.

7. Satisfactory on the whole, but open to faults such as overtaxing the child.

8. Efficiency of pupils higher; discipline suffers.

9. Makes the break between the grades and high school less sudden.

10. All right if child does not meet too many teachers.

11. Very superior; teachers more interested; pupils develop broader ideas.

12. Excellent if teaching force is prepared and in favor of the plan.

13. If there is a poor teacher in the departmental corps pupils do not have her all the time.

14. Will abandon the plan, as we secure better results with one teacher to a grade; discipline easier, and teachers prefer old method of having a room of their own.

15. Gave the plan a fair trial but it proved an absolute failure; perhaps the novelty of the plan causes some to think it a good scheme.

16. Difficult to co-ordinate the work properly; moral hold of teacher not so strong; supervision by principal more difficult.

17. Will abolish or greatly modify it this year; pupils are not taught individually.

18. Do not care for it; would rather have one-teacher plan in first-year high school than extend departmental system to the grades.

The following item is condensed from an article in the *New York Globe:*

A Permanent Educational Exhibit

In the fall there will be opened in this city what is planned to be the greatest and most complete exhibit of modern school equipment ever brought together. Space to the extent of two floors has been reserved in the new Educational Building at 70 Fifth Avenue, corner of Thirteenth Street, to display the remarkable collection of samples and the best models of everything belonging to the equipment and supply of educational institutions. Teachers College has announced that it has made arrangements to transfer its museum interests to this permanent educational exhibit.

It is planned that the Educational Building, now in course of construction, will make it possible to arrange the display in one building of everything for the school, from the engaging of its architect to the selection of its teachers. With economy of time the educational public can procure schoolbooks, desks and seats, laboratory apparatus, and manual training equipment. Floors and offices have already been engaged by textbook publishers, teachers' agencies, and dealers in school supplies, as well as by illustrators of schoolbooks and agents for printers and paper mills.

For the convenience of teachers from out of town an attractive room will be provided with library facilities. Here members of school committees or school principals can chat comfortably with prospective teachers or keep other business appointments.

The upper floors will be subdivided and arranged to suit the needs of tenants. Two or more of these floors will be devoted to the Permanent Educational Exhibit Company and to salesrooms where everything pertaining to school construction and equipment of the most modern type may be seen. The first portion of the building (70×103 feet) is now ready for occupancy.

The Exhibit Company will to a certain extent act as a sales agent, and a bureau of information regarding construction and equipment of school buildings throughout the country will be open for the benefit of exhibitors.

Information in regard to the Permanent Exhibit Company can be secured from Charles C. Stimets, manager, Educational Building, Fifth Avenue and Thirteenth Street.

Compulsory Education in Ohio

The state of Ohio has a new compulsory-education act. This act is distinctly in advance of any of the laws under which even the northern states are operating. Some question having arisen as to the exact meaning and interpretation of the law, the attorney-general has given the following interpretation to this law as now amended:

That every boy between eight and fifteen years, and every girl between eight and sixteen years must attend school.

That every boy between fifteen and sixteen years not engaged in some regular employment must attend school.

That such attendance must begin the first week of the school term and continue for the full time that the school attended is in session, which in no case shall be for less than 28 weeks.

That no person, firm, or corporation shall employ any child under fifteen in any business whatsoever during any of the hours when the public schools are in session.

That no boy under sixteen and no girl under eighteen shall be employed unless such child presents an age certificate approved by the superintendent of the public schools.

That no boy under sixteen years of age shall receive a certificate until he is fifteen and has passed a satisfactory sixth-grade test, and no girl until she is sixteen and has passed a satisfactory seventh-grade test.

That any boy between fifteen and sixteen who ceases to work must return to school within two weeks unless he secures other employment within such time.

Some of the Problems of the National Education Association

At the summer meeting of the National Education Association the plan to raise one million dollars endowment was passed upon by the trustees and directors. Mr. T. W. Bicknell of Providence, R.I., was authorized to go ahead and try to collect this sum. The statement is made that if the money can be secured the income will be distributed among the departments of the Association in proportion to their needs. The department and the general offices of the Association will be housed in a proposed national home in Washington. The federal government will be asked to supply the money necessary for the erection of a building to be used for this general purpose and also to house a museum of pedagogy. The museum and the national home will, it is pointed out, become the center of education in the United States. Establishment of such an institution will duplicate the work of no other department of the United States government and it will not parallel the work of any other organization. It is said in connection with the announcement of this campaign for one million dollars that at present the Association is seriously handicapped because of lack of funds. There is no adequate income from the annual meeting, especially this year, when the number of members was very small indeed. The membership of the Association has shown itself so unstable in recent years that it is impossible from year to year to determine how much work can be undertaken by the Association.

The *Elementary School Teacher* has commented before on this endowment fund for the National Education Association. It still believes that the policy of trying to secure funds before there is a definite plan of organization which would appeal to those who might contribute the money is a mistake. The National Education Association is at the present time facing a very large problem. Its organization is by no means adequate to meet the needs of the teaching profession of this country. The committees which are investigating educational problems are of very different types and very different degrees of energy and efficiency. Some need money and would use it productively; others give no evidence of ability to use either time or money properly. The general Board of Directors which deals with these various committees has a curious way

of making appropriations in some directions and finding it impossible to support other lines of work. If the money of this endowment is to be adequately expended, there must be back of the endowment an association with a perfectly clear definition of its own policies and of its relation to other agencies which throughout the nation are undertaking to promote educational investigation and educational publication.

In this connection it is interesting to note that the president of the National Education Association made it the theme of his address at the annual meeting to discuss the possible reorganization of the Association. It has long been recognized that the Association is not representative. The members who come from the particular locality where the meeting is held have a very undue weight in determining the policies of that particular meeting of the Association. In any case, the numbers in actual attendance at the meeting are so small as compared with the teaching profession of the whole country that the question naturally arises of organizing a better means of communicating with all the teachers of the nation. Shall there be a general representative council of the whole profession? Shall there be local groups of directors for the different states? Shall the meeting be divided in such a way that various meetings are held in different parts of the country? Shall the meeting be held only at long intervals, say once every three or four years? These and various other questions are facing the Association as important questions of organization. The competition of the regular summer schools giving university credit for the work of teachers, the failure of the railroads to give rates, and other considerations are making inroads into the summer meeting. The winter meeting of the Department of Superintendence is coming to be educationally very much more significant than the general summer meeting. The whole problem of reorganizing the National Education Association therefore looms up as the chief problem before this Association.

The next meeting of the Association is to be held in St. Paul. It will be remembered that the meeting once before was voted for St. Paul, but for reasons best known to the board of directors of that date the meeting was brought to Chicago. In the year 1915

the Association will go back to California and will join with the Panama Exposition in the city of San Francisco. The actual seat of the meeting of the National Education Association for that year is voted to be Oakland, Cal. The new president of the National Education Association for the coming year is President Swain of Swarthmore College.

Importance of Policies regarding Promotion

The following paragraph is quoted from a pamphlet by Dr. L. C. Ayres, published by the Russell Sage Foundation. The pamphlet is entitled *The Effect of Promotion Rates on School Efficiency*. In this pamphlet Dr. Ayres has shown the importance to the pupils and to the community of changes in the rate of promotion. The paragraph here quoted puts the matter in a very concrete and striking form.

WHAT A CHANGE OF 1 PER CENT MEANS

The importance of small changes in promotion rates may be best illustrated by figuring the results of a change of 1 per cent, say for example from 80 per cent to 81 per cent, in the promotion rate in the elementary schools of a small city. Let us suppose that 1,000 children enter the elementary schools each year, the annual per capita cost for schooling is $40, and the buildings, grounds, and equipment have a value of $200 per child.

Under these conditions, the change in the promotion rate from 80 per cent to 81 per cent will have the following results: The time saved by each 1,000 children if they complete the elementary course will amount to 130 years of schooling, which means a saving of $5,200 annually. The plant required to accommodate the children will be decreased by about $25,600 worth, and the salaries of four teachers will be saved. The number of failures among the 1,000 children during eight years of school life will be reduced by 70, while the number of children failing during that period will be lessened by 19. The number of over-age children in the grades will be reduced by 220. These figures strikingly illustrate the importance of even the smallest changes in promotion rates.

Summer Schools

The summer-school movement for both pupils and teachers has come to be a commonly recognized feature of American education. Mr. Perry, writing for the Russell Sage Foundation of New York City, finds that 141 municipalities report vacation schools in one or more buildings in 1912. An aggregate appropriation of over $300,000 was made for the maintenance of these schools. Reports from all

parts of the country show that the movement was more vigorous this summer than last. For example, a clipping from the *Los Angeles Examiner* states that the summer schools opened for a term of six weeks and over 7,000 pupils enrolled for the vocational and academic branches. The vocational work is emphasized in these schools somewhat more than in the regular sessions. From St. Paul, Minn., comes a statement that 540 pupils enrolled in a summer school and are prepared to go forward with the regular work; 180 were in the high-school department and 360 in the grades. They are here allowed to make up the failures that they have accumulated throughout the year or they are at liberty to work in advance. From Savannah, Ga., there is a statement to the effect that the high school has for the first time undertaken to give an opportunity to those who failed of promotion to make up the work during the summer. In Chicago the summer school opened with a very large registration. A number of the schools are undertaking to try work outdoors and are chiefly recreational and vocational schools. On the other hand, the high schools are undertaking to give students an opportunity to make advanced standing as well as to make up their credits. In Omaha, Neb., open-air study is a feature of the high school. It is introduced for the first time in the vacation schools. "High-school boys and girls may now take Caesar and geometry out under the trees on the lawn. Others have found cool stations at tables in the corridors, in quiet corners on the main floor." All of these different kinds of experimentation with summer work find in the public press comments of a favorable type. The following editorials indicate the attitudes of various editorial writers:

> "Geographically and climatically it is desirable that we should have some suitable pastime and occupation for the children who are unable to leave the city."

Another comment is to the effect that "nowhere in the world is there more need of some good place to which children may resort than in the cities." Still another comment points out that "children in the summer are no longer employed on the farm as they used to be generations ago and it would be well for them to have the opportunity of working under a teacher who would give them

regular instruction as they used to receive it in the older days on the farm."

It is not only the pupils, however, who are afforded the opportunity of attending summer schools. So widespread has the movement of summer schools for teachers become that universities regard the success of their summer schools as among the most important items in their annual reports. Columbia University had this year a very large addition to its summer enrolment. The same is true of the various university summer schools throughout the Middle West. The University of Chicago and the University of Wisconsin both had large additions to their registration. The same report comes from the Pacific Coast, where the University of California had an unusual record. The Summer School of the South, which has long been one of the centers around which southern education has been focused, had a slightly smaller registration than usual this year, but carried on a very enthusiastic session. Summer schools at the normal schools also show large increases in attendance. These summer schools satisfy a demand which is different from that which is met by the university summer schools in that immature rural teachers and others who are taking their first certificates here have an opportunity to get review courses and to get some training in the principles of teaching. In addition to training immature students, the normal schools also furnish an opportunity for teachers who have been out in the service for some time to come back and get training even if they are not able to go to the remoter centers where the universities are holding their summer quarters.

Consulting Psychologists

Some years ago Professor Royce in a vigorous article advocated the appointment in all the leading school systems of a consulting psychologist. At that time the probability seemed very remote that school boards would take the step suggested by Professor Royce. In many of the large systems, however, since that time child-study departments have been organized and have been put in the charge of technically trained psychologists. These child-study departments have very commonly devoted their whole attention to the discovery of

abnormal children. A somewhat broader program is outlined in the following statement, which comes from Los Angeles, Cal.:

To bring every boy and girl attending the public schools of Los Angeles to the highest degree of efficiency, and to develop the individual child according to his capacity, is the purpose of a new departure in pedagogy taken by the board of education yesterday.

The board created the position of clinical psychologist, and appointed Professor George L. Leslie to fill the office for the year 1913–14.

Dr. Leslie's work will be to visit every class of every school in the city and determine the mental status of every pupil. By scientific methods he will ascertain whether a boy or girl is normal, abnormal, or subnormal as to mental faculties.

To this end Dr. Leslie will employ the Binet test, invented by a noted French scientist. Without instruments or any paraphernalia calculated to bewilder the pupil, he will, by oral test, determine the status of each child. If a boy who is sixteen years old is found to be twelve or eighteen years in mental development, special studies and mental treatment will be prescribed for him that will tend to bring him to normal.

The position of clinical psychologist carries a salary of $2,700 a year. This feature will be entirely separate from the health and development department of the schools.

Training of Music Teachers

The music teachers of the state of Ohio at their annual convention in the latter part of June took vigorous action looking toward the improvement of standards within their own profession. They considered the advisability of securing some kind of state supervision for the private instruction which is given in music throughout the state. They also recognized the importance of raising the requirements imposed on special teachers of music in public schools.

The teaching of music has not been taken very seriously in this country. Sometimes it is assumed that anyone can add a little teaching of music to the rest of the grade work. Sometimes it is assumed that a special teacher with a natural taste for music and a little training in the art of music can do all that is necessary without attempting in any way to mix music and the "regular" school work.

The qualification of special teachers of music are often very meager. Very often the only special training they have had for their professional work has been secured at a short summer training

school of three weeks' duration. The result is that music has not commanded respect and has never taken the place that it should in the course of study. It is gratifying to see that the Ohio teachers of music have realized that the way to improve the situation is to raise standards within the profession. It was a like conviction which led the physical education teachers of the Middle West at their last annual meeting to draft an elaborate scheme for the raising of the professional standards within their group. It is to be hoped that this consciousness of the teaching profession of its obligation to itself will spread rapidly, so that it will be impossible in the special branches for teachers to secure positions and influence school policy with regard to these special subjects unless they have the qualifications that give them a right to represent the subject adequately in school councils.

THE IDEALS WHICH LED TO THE FOUNDING OF THE SCHOOL OF EDUCATION[1]

ANITA McCORMICK BLAINE

This, our school, had its original and only true foundation in the mind and heart—in the purpose, of Col. Francis W. Parker. In its second phase, in which it was intended to be freed of all trammels for its work, it was founded (at the first instance of my wish, and Col. Parker's consent) by the efforts of its Trustees, Owen F. Aldis, Henry B. Favill, Cyrus Bentley, Stanley McCormick, and myself; and of Col. Parker and of his faculty.

In its third phase it had its foundation in a great concourse of elements—the appreciation of its work and of its principles and of its possibilities by President William R. Harper—the sympathetic joining with it of the faculties of three of the University's schools and of the University's Department of Education—and the consent to join the University, of all of its own authorities—which included its whole faculty.

To present to you all of the ideals which determined this broad foundation—and they make collectively a force which must surely help to move on this old world—is more than I am able to do.

I realize that in asking me to speak to you on this subject you have had in mind the limitations which I have in dealing with it. For that reason I am not staggered by the thought. For another reason I am not staggered by it. As I have known this work in education, its aims and its ideals have not been divergent. I do not need to analyze for you widely separating threads with their actions and interactions. With all the varying ideas and viewpoints of such a great concourse of so many active and independent minds, the purposes of this work have been in one great stream—the goals have all been at one great end. So that if I lead you to this stream, even though it be down one small rivulet, it is still to one large stream I bring you. For, in this current of educational effort, clashing and warring and disputing as the ideas have been—

[1] Address to the United Grades Meeting of the University Elementary School.

just as clashing and warring and disputing as ideas must be that are vital to the individual and to the world—they have been below that, as I have known the work, singularly and deeply harmonious.

I take it that currents that are deep are swept onward so much more irresistibly that the eddies do not stay the progress, nor separate nor retard the flow. And so, though I bring you to the ideals that dominated the work of the school, through my own medium, I have not the feeling that this is out of harmony with the greater force you find there.

However, I must ask you, as I go on, to bear clearly in mind that what I am giving you is my own standpoint, from which I have viewed this great school work.

At the outset of taking up the subject you have given me, it came to me to try wholly to depict Col. Parker's viewpoint toward his school—and then perhaps to add, of my own, views about the work, and parts of the work, which I should particularly want to emphasize.

The difficulty about this process is that I am inadequate for the description of Col. Parker's viewpoint toward his own school. Many others could give you that much better than I could—notably Miss Cooke, who carries on Col. Parker's work on the North Side—and equally notably, many members of his faculty whom you have with you.

I eagerly suggest that you gain an opportunity of hearing the statement of the school work which Miss Cooke gave to the Parker School this spring. We felt that it was as vivid and comprehensive a statement of this complex subject as we had had.

Leaving you in anticipation of that possibility as a reward of patience, may I then draw you on with me for the moment?

The composite seeming not a hopeful attempt, I shall not try then to separate myself from my own view of Col. Parker's school work.

So I will ask you, to remember that it does not necessarily follow from my statement that the more responsible factors in the school work would be represented therein, and if you promise to keep this in mind, I shall go freely forward and give you what seems the only thing to attempt—the ideals of our school as seen in the

foundation of it by one factor in that great and comprehensive process.

One other preliminary word is quite necessary to say—that I shall not attempt at all points to make clear wherein the school did not fulfil its whole ideal in its performance.

It is unnecessary to state that it did not do so. To speak of its ideals is to indicate that it reached out toward goals beyond its grasp which it had not yet perfectly attained. What you ask for today is a picture of those goals. To analyze the shortcomings and find the reasons and cures for those is the process of school work. This I am not attempting to describe in this moment. I am but trying to pass on to you—and I fear it will be but faintly—that alluring picture which I got a glimpse of when I first entered Col. Parker's school—the ideal growing ground for a child—a picture that itself has grown and grown as one gazes on it and dwells in it.

The ideals—the aims of its existence—of this school which was Col. Parker's—now yours—and ours by affection and courtesy! Let me once and for all entreat you whenever you approach this vital subject of the work of a school that is trying to set a standard for children, that you take great care to make the distinctions which give the essential idea. This move in education in general has been open, naturally and rightly, to a vast amount of criticism. We cannot approach the subject without meeting it on every hand. This school has challenged attention by its fundamental importance, and also more or less by its power to attract attention by its results. Its real upholders have always welcomed criticism—courted suggestion as a great avenue of help—and ignored the carping criticism which was manifestly trying to pick flaws for the pleasure of that interesting occupation, for which new territory always offers so many easy and attractive opportunities. But there is a vast amount of keenly interested criticism which shoots wide of the mark, because it proceeds from a lack of understanding of the real ideas contained in the terms used. I have often been engulfed by the hopeless and helpless feeling that that situation leaves one in, when it is realized that a word will not straighten the issue, and that the critic will not give more than passing attention to the matter. The confusion is often deeper and more important, however, than

the momentary missing of the point by casual beholders. For real criticism is the meat and drink of constructive work in education, or in anything else and we can ill afford to have it mixed with the poison of a misunderstanding of the real idea.

It is the frequent vision of this confusion which leads me to beg you to make the correct distinctions in dealing with this subject.

A serious effort to advance education a point further in its evolution is worth clear thinking.

Loose thought does more to becloud issues than we are aware of. So much so-called thought is but a game of follow-the-leader that it becomes an important matter for the leaders not to perpetuate side-tracking lines of mistake. This, no doubt, is an unnecessary reflection or suggestion to make within a university atmosphere. I must be pardoned for making it, on the score of coming into the sacred precincts from the philistine, plebeian sections of the city—of the country—of the world. But even in coming out of the outer darkness—or because of that—it seems worth while to point out the pitfalls that may catch the steps of the unwary, who may stray from the pure light of university thought.

Such familiar battlegrounds due to varied interpretations come at once to mind—as in the common error of making the poor, jaded word discipline do service for the birch rod and an intellectual development of the power of the will, alike, the idea is torn limb from limb in separating these two impersonations of it. The result in the casual beholder is, nine times out of ten, the retention of the more dramatic fact of the relegation of the birch rod to the dust heap—and the conclusion, immediate and final, that discipline—all discipline—is gone bag and baggage to the same quarter.

An equally ready to hand spot of confusion is the well worn topic of interest. Because interest in the mind of the child may be considered a *sine qua non* of good work, therefore your non-distinction-drawer, whipping poor interest around the stump of all of his own preconceived ideas, pictures your education as tied to the apron string of every passing whim of each separate and individual child of every group—a confusing enough result, surely, in the mind of the believer, if not in the actual fact.

These errors of the common herd are, as we have said, irrelevant

n this presence. But they serve to illustrate common mistakes which can be corrected only by the uncommon clearness of the thinking few—and therefore they may be alluded to pleadingly by a commoner.

May I then proceed to draw one distinction which I think lies at the root of the whole matter?

The first aim of this school, as I have seen it, was to improve the conditions of school life for all children—to improve them by its immediate discoveries for its own pupils and, by that demonstration, and its influence, for all the children in the world—if possible to reach so far.

This does not fall within the territory of just trying to do what is and has been done in a yet better or more perfect way. It has in it a very different meaning, viz., to change more or less radically, as the case may be, the existing conditions in schools for children; and it clearly involves a choice. If the former idea is quite right, then the other is not to be followed. If the latter idea is right, then the former idea is in some sense wrong. This division or choice is not always a clear one by any means. Known schools would not necessarily fall into the one category or the other. But yet in what Col. Parker set forth to do for children in schools is involved in an essential way an element of choice—an element of negativing another way which largely obtained and which he found to be not the right condition for children's education, and which his purpose was to supersede as largely as possible.

Thus, in the aim of his school to improve the conditions for children is contained an arraignment of a former, and what it would have been his life hope to call an outgrown, idea in the education of children. I think any understanding of the ideas of this school must proceed from a realization of that former state and those elements in it which Col. Parker's work set forth to eradicate —it must proceed from an arraignment!

Holding the former way, then, at the bar, we must make counts against it—in all solemnity.

It received the pupil from the hands of its parents, but it did not take all of him. At the gate of the school he, like the Gaul he was to learn so much about, was divided into three parts. His

parents were told to retain two of them, keeping entire charge of his character formation and his physical well-being. The school assumed the task of developing his head machine.

Due notice being thus given of what the school attempted and what it did not attempt to do, it could with perfect good faith wash its hands of all it had not undertaken—and this it proceeded to do. It held its pupils then as little integers for head work, and its educational work went on, on that theory. It became then an irrelevant—almost an impertinent—question if one ventured to inquire, whether such and such a part of school work was a salutary influence on the pupil's character—or whether the school life was conducive to the pupil's health.

Those were questions for the home to deal with wholly! Any particularly benign teacher might enter that realm with her advice. But it was by no possible construction her responsibility.

It is strange to stop to consider, in this conception of the school's function for children, what a large proportion of time and influence the school was willing to assume in the lives of children, on this basis of partial responsibility.

By this division the school took no particular account of the pupil's physical development, and the pupil had no particular way through the school of acquiring a greater store of strength than nature had started him with. The quota of gymnastics in schools in general would hardly make an appreciable limit to this statement. It is quite fair to say that it was not considered the school's especial business to conserve or increase the pupil's store of physical vigor.

Dealing, as the school set forth to do, then, with the head work of the child, it would be fair to hope that that would be done with enlightenment. But it is more in keeping to expect that a narrow and partial conception of the whole realm of school work would be followed by a limited conception in the field which it did assume. And this we find to be the case.

In the *ancien régime* the pedagogic process must be declared to be faulty.

It consisted mainly in the stuffing of the pupil's mind with the thoughts and conclusions of others, and the requirement from him of the repetition of these—too often word for word—as his contribution.

It was not only the stuffing of his mind with foreign material, but in such unrelated nuggets as to make no mass which he could by any process of his own assimilate.

The result of this pedagogic conception was no thinking process on the part of the pupil—and no possession by him of such material as he had succeeded in uttering by rote.

The standards set up by the schools of yesterday were in every case the standards set by others. They were labeled by names made sacred by an awe, which severed them from all real connection with the mind of the pupil.

With the leverage of distance and the power of superstitious reverence, the hold they gained over the pupil was absolute—so that it would never occur to a pupil to have any confidence in any departure whatever of his own. These standards became an absolute measure of excellence—not from intrinsic appreciation, but from artificial stamp and acceptance. The result was a complete stoppage of any originality and a prime emphasis on imitation.

Discipline in the olden time was a method invented for dealing with inevitably refractory human nature—a means of catching the refraction in the shoot, and bringing it into line for the easement of trouble for the population in general, and for individual teachers in particular. It was a method applied on the outside—prickers of one sort or another, which the refractory one would come up against and wish for his own comfort in the end to steer clear of—a process convenient enough for an ease-loving and thought-shirking adulthood, but not producing in the pupil any real control whatsoever.

From the foregoing elements, it is not a surprise to reach the predicament the old education found itself in. With no physical joy to expect, no work of one's own, but only plodding through the repetition of the work of others, no free play to find one's own *métier*, nothing wanted but strict adherence to a stamped pattern —with spikes of tongues and glances, reprimands and marks (meaning other reprimands) on every side to prevent any deviation from the lines as laid down, an incentive for such work was needed —and needed badly.

And, alas, the school—which should flash the beacon light of high motive from hilltop to hilltop for humanity—fell into the

device, common to all authorities needing to hold their populace within their power—resorted to the appeal to the lower elements of human nature—the fear of punishment and the hope of gain—the appeal to the selfish desire to escape censure, and to excel above others.

It does not follow from a clear seeing of these elements in the old education, that all school-rooms or all schools contained them. Minds in all ages have done their part within systems on plans wholly of their own inspiration—minds have found themselves, in spite of all barriers forcing the contrary.

Schools have always been full of the surprises of minds coming upon revivifying connections of ideas—on their own unbounded uprising personality—on one and another teacher, who sees and inspires—and lives have been built on the foundations laid by such chance teachers.

But that does not go so far as to negative the statement that, in the ordinary course and by the accepted plan, at the last end of the old education, all was but left to be overcome. The end was but to begin, and perhaps the best result was the common cry that nothing was remembered.

In the realm of the physical, it was to put an adult mind on the subject and get out of the circumstances what could be rescued—and the effort probably too late at that.

If to think was needed, it was to begin by getting out of and forgetting well-worn ruts.

If a personality demanded recognition, it was at the cost of eradicating the almost ineradicable stamp. If control was to be reached, it was needed to begin all over again in the school of experience.

If co-operation could hold sway (instead of fierce rivalry and competition), it was only by uprooting that sturdy plant of selfishness, developed by careful cultivation through all the period of youth.

We are used to crying out against human nature and railing against our civilization. I wonder if it often enough occurs to us that our civilization is made by the people of it—and that we are making in turn the civilization of tomorrow.

The minds that must mount, will. How many more might soar if we gave them the chance! How many thousands and millions may be losing their lights, in the treadmill of educational process!

It is no doubt divinely true that we must be born again—but if so is it within reason that our educational process should consider that divine necessity so wholly outside of its sphere? Might there not be a gradual rebirth in which our education should play the leading part?

It is a thankless task to arraign with no outlook of possibility and hope.

We are never driven to this necessity in scoring ways past for children—for there are always ways to come. For them, ever and anon, teachers arise—prophets—to hold aloft torches to light new paths, and while we spur our search by glancing at the steps we wish to leave, we may concentrate our efforts more on that better way of discerning the footsteps traced ahead and, by the flicker of the light in advance, find which steps are the ones to follow and which to improve.

Col. Parker was one such prophet.

He founded our school in the spirit of a prophet for the purpose of seeking and finding light to shed on the path of mankind.

[*To be continued*]

SEVEN, EIGHT, AND NINE YEARS IN THE ELEMENTARY SCHOOL

E. C. BROOKS
Professor of Education, Trinity College, Durham, N.C.

Can a four-year high school resting on a seven-year grammar school give a preparation equal to that of a four-year high school resting on an eight-year grammar school? It is not so much the purpose of my investigation to answer this question as it is to present some facts relative to the grammar schools especially and the high school incidentally, which are sufficient to prove this, that there is no general rule governing the length of the grammar school, and no strong reason why either a seven-, eight-, or nine-year school, as a class, exists in its present form. Each seems to be the result of accident or imitation, and, in many instances, an eight-year grammar school might, without at all detracting therefrom, or adding thereto, be labeled with equal accuracy a nine-year school, or a seven-year school.

The efficiency of any school system must be judged (1) by its content, that is, the quality and the quantity of subject-matter presented, and (2) by its organization, that is, how this content is distributed through the years, how it is adjusted to the age, ability, and experience of the child, and what opportunity it gives the child for the best development, consequently the best progress from year to year. In studying the content and the organization of the grammar school, this question naturally presents itself: Is there an exact amount of subject-matter necessary for all children before they can begin the work of the high school? Or can we measure the content of the grammar school in terms of units? Whenever a definite number of years is adopted, whether it be seven, eight, or nine, the quality and quantity of the content of the grammar school must be made more nearly uniform. When this is done we are close to a unit basis.

In this investigation of the content and the organization of the grammar school, I have endeavored to learn as much as possible

about: (1) The courses of study in a number of schools—their length in years as they exist and the preferred length; at what legal age pupils enter school; the number of daily recitations for each grade; the length of the recitation and the school day for each grade; and the amount of work that each grade is supposed to do out of school. (2) The promotion of students—what percentage of each grade completes more than the work outlined for the whole grade; how students are promoted from grade to grade; how much time is saved by this method; and what per cent of each grade repeats more than half the work of the grade.

In order to obtain this information I sent out more than two hundred blanks, including in each a return stamped envelope. I was guided by the list of schools found in the last number of the *Report of the United States Commissioner of Education* showing the number of schools in towns of more than eight thousand population that contain seven-, eight-, and nine-year grammar schools. I sent about five to a state, three to superintendents of the eight- and nine-year grammar schools, and two to those of a seven-year grammar school. From these two hundred blanks sent out I have received about seventy replies from thirty-nine states. They contain such interesting information, that, in order to be as accurate as possible about one feature of the report, I wrote about thirty personal letters to as many superintendents in as many states.

The information obtained shows that the seven-year grammar school is found in nearly every state of the union; but as a rule it prevails more generally in the South. In New England the eight- and nine-year schools are found in about equal ratio in the larger cities, but the tendency is to reduce all to eight years; while in the West, the eight-year school prevails with a tendency in many sections to reduce it to seven years. Is a seven-year school better for the New England states? Is the quality and the quantity of the content the same? And is the organization of the one as well adjusted as that of the other? In other words, what determines the length of the grammar school?

If we can for the present omit the personal inclination of the superintendent, it would appear that the length of the grammar school is governed by (1) the age of students entering the first

grade, (2) the number of subjects taught daily in each grade, (3) the opportunity offered by the school organization for the promotion of students, and (4) the character of the population in the community of the school. Yet in the same state where all these conditions are similar, we find grammar schools of different lengths, showing that the personal inclination of the superintendent is a strong factor.

1. THE LEGAL AGE OF ENTRANCE

This question was asked each school: If three students, ages respectively five, six, and seven, enter the first grade at the same time, will they reach the high school at the same time, granting equal capacities at the same age? The answers to this question were almost unanimous in the opinion that the seven-year-old child would reach the high school at least a year before the others; and, if an opportunity is given for the capacity of each to express itself, the six-year-old child will reach the high school ahead of the five-year-old child. Yet only a few of the schools exhibit any scheme by which one student can progress more rapidly than another.

The first opinion is verified by the reports, for in the schools of Alabama, Texas, Virginia, and Tennessee the age of admission is seven, and the length of the grammar school is seven years. In Tennessee the grammar school in one city is eight years, and the high school three years, but high-school work is probably done in the last year of the grammar school, as is the case in many eight-year grammar schools in the South.

Students entering at six years of age in Arkansas, California, Colorado, Florida, Georgia, Idaho, Illinois, Indiana, Kentucky, Missouri, Montana, North Carolina, New Hampshire, Ohio, Oklahoma, Oregon, Pennsylvania, South Carolina, South Dakota, Utah, and Washington show different results. In Colorado, one city has a seven-year course, but prefers an eight-year course. On the other hand another city in the same state has an eight-year course which "under present conditions," it says, is advisabl . Florida has eight, Georgia, seven; Idaho, eight, but prefers seven; Indiana, eight; Kentucky, eight; Missouri, two eight, one seven; Montana, eight; North Carolina, seven; New Hampshire, eight;

Oklahoma, eight; Oregon, eight; Pennsylvania reports three schools—one seven, another eight, and the third nine; South Carolina, seven; Utah, eight; Washington, eight under present conditions; California, eight; Ohio, eight; Illinois, eight.

Students entering at five years of age in Connecticut, Iowa, Massachusetts, Michigan, Mississippi, Nebraska, New Jersey, New York, Rhode Island, Vermont, and Wisconsin show likewise different results. One school in Connecticut has eight years, but would give students opportunity to complete the work in seven years. But in another school the course is nine years. In Iowa, Des Moines has eight, but would reduce it if the school year were longer. It is now one hundred and ninety days. In an Iowa city the course is eight and one-half years. In Massachusetts it is nine years, with a few exceptions. In Mississippi it is eight years; Nebraska, eight years; New Jersey, eight, "as a rule"; New York, eight; Rhode Island, nine with one exception; Vermont, nine; Wisconsin, eight, but in favor of a reduction.[1]

It would appear then that the progress of students through the grammar-school years is not influenced as much as it should be by the age of the pupils. There may be a vast difference in the ages, yet the progress may be the same. An extreme case, to use as an illustration, is a young man now at Trinity College, Durham, N.C., who had, all told, only five years' training when he entered college. He brought a diploma from one of the best high schools in the state that maintains a four-year course carrying fourteen units. The young man entered the high school at twenty-five years of age, having had only two years' preparation beforehand, and he completed the high-school course in three years. If this young man had entered a city school where the number of daily recitations are counted with two figures, it is quite probable that he would have been ten of the twelve years at least passing through the grammar school and the high school. And the end of his schooling would have been reached even before he could pass into the high school. His age would have aided but little in his progress through the years.

[1] The reader will keep in mind that these facts are taken from an average of three reports from a state.

The reports lead one to believe that it does not make much difference whether the work of the grammar school is called six, seven, eight, or nine years in length. In fact, this tells so little about a school that the grouping of the courses by years might very well be dropped. For instance, one superintendent writes: "In seventeen years as superintendent I have had only one pupil, entering at six, who finished the grammar and high school on required time." The two make only a nine-year course.

The superintendent of a certain school in Connecticut says: "The really vital test of the school system is not how many grades below the high school, but how many years does it take the average pupil to reach the high school." He believes it will take nine years; but "popular clamor will compel us all to have an eight-grade system, I suppose." Here students enter at five years of age, but he believes that if students entered at seven they would gain more than a year.

The most perplexing problem, then, of the city school systems is not the length of term, the age of pupils, nor governing boards, but it seems to be one or both of the following: (1) the number of daily subjects or recitations, and (2) the lack of opportunity for individual progress.

II. THE NUMBER OF DAILY RECITATIONS

The number of subjects taught daily in each grade of the grammar school, the order of their appearance, the prominence given to each, and the amount of time devoted to each furnish a chapter in the study of present-day education that is no less astonishing than it is unique. In studying the reports I was struck with this most interesting feature that one school in New England requires each pupil of the third grade to recite nineteen times daily; while another school in the same state requires its pupils of the same grade to recite only four times daily. In order, then, that these figures might be better understood, I wrote personal letters to the superintendents of about thirty schools asking each to define the term "recitation," and to send me a copy of the daily program of the different grades; for it was clear to me that a grade which attempts to instruct pupils in four subjects daily should

show different results from one that attempts to instruct pupils in nineteen subjects daily. The superintendents, as a rule, replied promptly to my letters giving me their ideas of the recitation and sending me also copies of the daily program.

I was aware of the fact that the term "recitation" included in many schools the time spent by the teacher in assigning a subject to a class and in aiding the class to overcome the difficulties of the lesson in order that the class on the following day might be well prepared to recite that lesson; for the clamor against home study has forced teachers to some such practice as this. Let me add here that home study is prohibited in some cities by the authority of governing boards; and, in one instance, the state law prohibits assigning home work to pupils under fourteen years of age. And it is at fourteen that high-school work begins as a rule. Having these facts in mind I asked for a definition of the "recitation"; and I quote one which is typical. "So far as my observation and experience go, the word recitation, as used in school work, means the time in which the group of children recite directly to the teacher and is exclusive of preparation periods." Other schools that included the preparation in the number of daily recitations designated the same in the daily program sent to me, so it is not difficult to study this subject.

I have selected from the number received four daily programs. One is taken from New England, one from north of the Ohio, one west of the Mississippi, and one from the South Atlantic States. Practically a duplicate of each, however, could be found in modified forms in the North, South, East, and West.

Program I, given on the following page, shows the content of a seventh grade in a New England school:

This "Order of Exercises" shows that the day's work is divided into sixteen periods, exclusive of all recesses; two of these periods are devoted to individual study or preparation; while fourteen are given over to recitations or some order of exercise. A student entering the first grade at five years of age would be eleven years old when he reached the seventh grade. Suppose this pupil is in the first division of the history class, he is on recitation continuously from the period of opening exercises to 1:45 o'clock in the

afternoon, save the recess periods. He has been on nine exercises. When did he make his preparation for the various exercises? At 1:45 he has twenty minutes study period in which to prepare his geography lesson. Then come reading and written work in order, followed by another period of fifteen minutes for individual work, and the day closes with music. The content here is great indeed,

PROGRAM I

ORDER OF EXERCISES

Of the Seventh Grade ..... School
Fall Term, 1909 ..... Teacher

	TIME		RECITATIONS		STUDY	
	From	To	Class	Subject	Class	Subject
A.M.	8.30	8.40	Opening	Exercises Talks on Physiology and Manners		
	8.40	9.30	All	Arithmetic	All	Arithmetic
	9.30	9.35	All	Gymnastics	.....	.....
	9.35	10.00	All	Language	All	Language
	10.00	10.15	All	Recess	.....	.....
	10.15	10.40	1st Div.	History	2d Div.	History
	10.40	11.00	All	Penmanship	All	Penmanship
	11.00	11.10	All	Mental Arithmetic	.....	.....
	11.10	11.30	All	Spelling	All	Spelling
Thurs.	11.00	11.30	All	Drawing	.....	.....
P.M.	1.30	1.45	All	Music	.....	.....
	1.45	2.05	2d Div.	History	1st Div.	Geography
	2.05	2.30	All	Geography	.....	.....
	2.30	2.35	All	Recess	.....	.....
	2.35	2.55	1st Div.	Reading	2d Div.	Written Work
	2.55	3.15	2d Div.	Reading	1st Div.	Written Work
	2.15	2.30	All	Individual Work	.....	.....
	2.30	3.00	All	Music	.....	.....

but the quality can only be approached approximately. Here the organization keeps all the pupils together in all subjects except those of history and reading; and it is quite probable that in these exercises they all recite the same lessons, although there are two divisions of the grade.

Program II, given below, exhibits a "Daily Program" of the fifth grade, which comes from a school north of the Ohio.

Here the content, or the number of subjects for each child, is about the same as that in Program I, but the organization is vastly different. The grade is divided into two sections, and one

recites while the other studies. The length of the day here is two hundred and eighty minutes, against two hundred and fifty in Program I. In arithmetic, history, physiology, geography, grammar, and reading, the two sections recite separately; but in literature, writing, music, calisthenics, spelling, individual assistance they are all grouped together. In all subjects, therefore, that require

PROGRAM II

DAILY PROGRAM

.....School

Grades 5A and 5B .....Teacher

Hour			Recitation Period	Study Period
A.M.	8.45	8.50	Opening Exercises	
	8.50	9.20	Literature, Writing	Drawing
	9.20	9.40	B. Arithmetic	A. Read., Spell., Def.
	9.40	10.00	A. Arithmetic	B. Arithmetic
	10.00	10.15	B. Hist. or Physiol.	A. Arithmetic
	10.15	10.25	A. Hist. or Physiol.	B. Hist. or Physics
	10.25	10.40	Recess	
	10.40	11.00	A. and B. Music	
	11.00	11.20	B. Geography	A. Hist. or Physiol.
	11.20	11.30	Calisthenics	
	11.30	11.45	A. Geography	B. Geography
	11.45	11.55	Individual Assistance	or General Work
P.M.	1.30	1.40	Spelling	.....
	1.40	2.00	B. Grammar	A. Geography
	2.00	2.20	A. Grammar	B. Grammar
	2.20	2.35	Calisthenics and Rest	.....
	2.35	2.55	B. Def., Reading	A. Grammar
	2.55	3.15	A. Def., Reading	Read., Spell., and Def.
	3.15	3.25	General Work and In	dividual Instruction

much previous preparation, there are two sections; and one studies while the other recites; but in the exercises that do not demand previous preparation, except spelling, they are all grouped together. It is interesting to notice how the emphasis is placed. Twenty minutes are devoted to arithmetic; ten minutes to history; twenty minutes to music; fifteen minutes to geography; ten minutes to spelling; twenty minutes to grammar; thirty minutes to literature writing; ten minutes to calisthenics; and ten minutes to individual assistance. While one class is reciting history in the ten minutes allowed, the other class is devoting the same time to preparation; and thus the day is spent in short periods.

Program III is from the seventh grade of a school west of the Mississippi. It is as follows:

PROGRAM III

Sections 1 and 2 — Seventh Grade

Time			Recite	Prepare
9.00	9.15	15	Music	
9.15	9.40	25	2. Arithmetic	1. Spelling
9.40	10.05	25	1. Arithmetic	2. Grammar
10.05	10.30	25	2. Grammar	1. Grammar
10.45	11.10	25	1. Grammar	2. History
11.10	11.35	25	2. History	1. History
11.35	12.00	25	Drawing, Tues, Thurs., Fri.	Mental Arith., Wed.; Penmanship, Fri.
1.15	1.40	25	1. History	2. Geography
1.40	2.05	25	2. Geography	1. Geography
2.05	2.30	25	1. Geography	2. Reading
2.45	3.10	25	2. Reading	1. Reading
3.10	3.35	25	1. Reading	2. Spelling
3.35	4.00	25	Spelling, Mon., Tues., Wed.	Mental Arith., Thurs., Fri.

This grade is divided into two sections, and while one recites the other prepares. The emphasis is placed on five subjects: arithmetic, grammar, history, geography, and reading. The time devoted to each subject is fifty minutes, twenty-five for study and twenty-five for recitation. Here the number of daily recitations is considerably less than is found in the other two; yet the organization of the classes is very similar to those found in Program II. The length of the school day, exclusive of all recesses, is three hundred and fifteen minutes. Although the number of subjects taught daily in this school is smaller than in either of the above, the school day is the longest.

[*To be continued*]

A STUDY OF ERRORS IN TESTS OF ADDING ABILITY[1]

C. L. PHELPS
Leland Stanford Junior University

In some of the recent tests of adding ability the results have been based almost entirely on the rapidity with which combinations were attempted and not much attention has been given to the errors that were made in taking the tests. Justification of this failure to make a careful study of errors is found in the claim that speed and accuracy show such a close positive correlation in these tests that checking for errors can safely be neglected. If this claim is true, the only remaining reason for making an analysis of errors is for diagnostic purposes. But this reason alone seemed sufficient to justify the writer in making an examination of a large amount of data in order to find out how often errors are made on the various combinations, what per cent of a group make them, how the combinations rank in difficulty, and what kind of mistakes are made on them.

SOURCE AND DESCRIPTION OF DATA

The material upon which this study is based was collected by Otis and Davidson[2] for their investigation of the reliability of standard scores as a measure of adding ability. It was collected from the eighth grade of eight of the larger grammar schools of San Jose, California, a city of about 50,000 population. It will be seen by reference to their study that their tests consisted of 25 arrangements of the combinations varying slightly in order from the Courtis Test No. 1, that the tests were one minute in length, that five were given each day for five days, that they were all given by the same person in exactly the same way, and that 270 children were thus examined.

[1] This study was suggested and guided by Professor Percy E. Davidson of Leland Stanford Junior University.

[2] "The Reliability of Standard Scores in Adding Ability," *Elementary School Teacher*, October, 1912.

Of this material the papers of 238 children have been checked for errors and the results studied. Of the 32 sets of papers rejected for this study 20 were five tests short of the full number and twelve were eliminated because they were not representative and would have vitiated the results if they had been included. For example, when it was found that the lower figure had been written for the total of several combinations in succession, it indicated that no attempt had been made to add and the sets of papers containing this error were left out. This type of error, with others which could not in fairness be included, resulted in the elimination of the twelve sets referred to as not representative. The 238 sets remaining, consisting of 5,950 tests, are considered entirely fair for the purposes of this study.

METHOD OF MARKING ERRORS AND TABULATING RESULTS

In checking the errors each paper was examined carefully and all mistakes marked. At first a separate marking was made of combinations which had been missed at the first stroke of the pencil and corrected by a second stroke. But this was later abandoned and only those errors were counted which had not been corrected at all.

When the errors were all marked, a system of tabulation was arranged in such a way that the errors on each combination could easily be totaled for each pupil as well as for the whole group. This was done for each school separately, and then the results were collected into one table which is here presented as Table I.

DISPLAY AND DISCUSSION OF TABLES

This table shows gross results just as they appeared when the first tabulation was completed. It is reproduced here in order to show how the errors were distributed among the eight schools and on the various combinations. On examination several things can be seen in regard to this point. One is that there is a rather erratic distribution of errors in the ones and twos; another is that there is a more regular distribution in the other combinations; a third is that the number of errors increases with the increase in size of the combinations; and a final one is that the errors on the doubles are almost as erratic in their distribution as on the ones and twos.

Table I takes no account, however, of the fact that in any arrangement of combinations for tests having a time limit certain

TABLE I

SHOWING ERRORS ON EACH COMBINATION FOR EACH SCHOOL AND FOR THE WHOLE GROUP

COMBINATIONS	SCHOOL No. 1	SCHOOL No. 2	SCHOOL No. 3	SCHOOL No. 4	SCHOOL No. 5	SCHOOL No. 6	SCHOOL No. 7	SCHOOL No. 8	TOTAL
	40 Pupils	12 Pupils	14 Pupils	23 Pupils	33 Pupils	48 Pupils	28 Pupils	40 Pupils	
0+0	2	2	0	0	19	0	0	0	23
0+1	1	1	0	2	5	2	3	1	15
0+2	1	1	1	1	6	1	2	3	16
0+3	0	2	1	2	5	6	1	0	17
0+4	2	1	0	1	6	1	3	0	14
0+5	4	1	2	2	9	4	7	2	31
0+6	1	1	0	0	1	0	0	0	3
0+7	0	3	0	1	5	4	1	0	14
0+8	5	1	2	2	5	12	4	6	37
0+9	0	0	0	0	4	4	1	0	9
1+1	1	4	1	1	2	1	5	1	16
1+2	1	4	0	8	8	5	4	8	38
1+3	4	2	1	7	6	18	8	7	53
1+4	8	8	7	24	22	43	12	30	154
1+5	10	16	8	11	6	16	7	12	86
1+6	22	15	4	16	21	16	21	17	132
1+7	21	17	22	19	12	19	16	18	144
1+8	6	6	2	4	3	9	5	2	37
1+9	9	6	3	4	17	11	9	6	65
2+2	6	1	3	1	4	4	0	3	22
2+3	8	7	1	4	3	3	5	1	32
2+4	6	11	2	10	5	8	7	10	59
2+5	19	9	5	8	20	14	9	18	102
2+6	7	2	3	3	10	3	11	3	42
2+7	8	17	8	11	19	32	22	41	158
2+8	3	7	1	5	8	11	6	11	52
2+9	7	6	0	7	10	13	15	13	71
3+3	15	4	2	15	5	12	19	15	87
3+4	5	1	2	1	7	13	8	3	40
3+5	10	8	14	11	9	12	8	6	78
3+6	12	15	7	6	4	11	12	4	71
3+7	8	30	11	11	7	36	11	6	120
3+8	23	34	9	21	30	44	59	11	231
3+9	48	46	16	19	39	45	52	39	304
4+4	1	2	0	0	3	0	1	0	7
4+5	3	3	2	3	4	9	12	7	43
4+6	2	12	2	7	6	4	4	4	41
4+7	21	52	12	8	8	44	50	37	232
4+8	30	23	7	14	11	21	19	17	142
4+9	32	56	23	19	11	19	22	10	192

TABLE I—*Continued*

Combinations	School No. 1	School No. 2	School No. 3	School No. 4	School No. 5	School No. 6	School No. 7	School No. 8	Total
	40 Pupils	12 Pupils	14 Pupils	23 Pupils	33 Pupils	48 Pupils	28 Pupils	40 Pupils	
5+5	0	0	1	1	1	0	1	0	4
5+6	17	23	5	10	15	18	22	25	135
5+7	16	35	6	11	16	13	26	11	134
5+8	78	63	26	51	24	44	58	25	369
5+9	32	41	21	47	19	30	78	30	298
6+6	2	1	1	3	1	7	1	5	21
6+7	81	11	10	13	14	24	12	21	186
6+8	14	15	0	1	6	3	18	5	62
6+9	32	98	7	35	23	50	42	33	320
7+7	2	3	2	1	5	1	2	0	16
7+8	35	11	16	6	9	18	19	23	137
7+9	71	75	5	38	61	64	40	41	395
8+8	14	11	8	20	6	22	25	12	118
8+9	14	27	3	13	31	21	20	16	145
9+9	3	0	0	3	3	3	1	5	18
Total	783	851	295	542	619	848	826	624	5,388

combinations will be attempted oftener than others because some pupils will work more rapidly than others. For this reason only approximate results can be obtained for those combinations which, in the arrangement of the tests, fall beyond the average number of attempts made by the pupils tested. Accurate results can be obtained, however, for all those combinations which fall safely within this limit. These will all receive practically an equal number of trials because of the slight variation in the order of the combinations for the different tests and because the average deviation from the central tendency with regard to the number of combinations is not high, except in one school where it amounts to 10.6 combinations. But in this case the average for the school is so far above the average for the whole group that results are not affected. In the other cases they would be affected but slightly. For combinations which do not fall within the range of average number of attempts, a certain amount of data is available and fairly accurate conclusions might be drawn concerning some of

them. But it is perhaps safer to eliminate them from this consideration. Combinations affected in this way are: 0+0; 1+1; 4+4; 4+9; 5+5, and 6+8. There are also certain combinations which are repeated in inverse order within the limits noted. These have all been credited with twice as many trials as the others.

These explanations prepare the reader for Table II, which is derived from Table I. In this is shown the percentage of error made on each combination, the basis for calculation being the actual number of times it was attempted. This table is considered as fair an index to the relative difficulty of the combinations as can be derived by this method from the data at hand.

TABLE II

SHOWING PERCENTAGE OF ERRORS BASED ON THE NUMBER OF TRIALS FOR EACH COMBINATION

Combinations	Errors in Percentage	Combinations	Errors in Percentage	Combinations	Errors in Percentage
0+0	.39	2+2	.37	4+8	2.38
0+1	.25	2+3	.54	4+9	*
0+2	.14	2+4	.50	5+5	.07
0+3	.28	2+5	.86	5+6	2.27
0+4	.24	2+6	.71	5+7	2.25
0+5	.52	2+7	1.33	5+8	3.10
0+6	.05	2+8	.88	5+9	2.50
0+7	.24	2+9	1.19	6+6	.35
0+8	.62	3+3	1.46	6+7	1.56
0+9	.15	3+4	.67	6+8	1.04
1+1	.27	3+5	1.31	6+9	2.60
1+2	.64	3+6	1.19	7+7	.14
1+3	.45	3+7	2.02	7+8	2.30
1+4	1.30	3+8	1.94	7+9	3.32
1+5	.72	3+9	2.55	8+8	1.98
1+6	2.22	4+4	.12	8+9	2.44
1+7	2.42	4+5	.72	9+9	.30
1+8	.62	4+6	.69	.....	.....
1+9	1.09	4+7	1.95	.....	.....

* Unsatisfactory data.

But it may be held by some that the method used here is not a fair one because it is based entirely on the *number of errors* made and does not take into account the *number of children* making the errors. It may further be held that, because of the large number of trials possible, a very few repeaters could make the entire number of mistakes credited to any combination. When such a possibility suggested itself all the papers were checked again to see

exactly what the facts were concerning this possibility. The findings in this search were tabulated by schools so as to show how many children missed each combination a single time and how many missed it two or more times. This table is not reproduced here, on account of lack of space, but two condensed ones, showing the rank of 20 of the combinations above the ones, are taken from it along with a similar table taken from Table II. In these three tables 20 combinations are ranked in difficulty in accord with (1) the number of times they were missed, (2) the number of children that missed them, and (3) the number of children that missed them two or more times. These tables are presented, for purposes of comparison, as Tables III*A*, III*B*, and III*C*, respectively.

TABLE III*A*

Rank	Combinations	Errors in Percentage of Attempts
1....	9+7	3.32
2....	8+5	3.10
3....	9+6	2.69
4....	9+3	2.55
5....	9+5	2.50
6....	9+8	2.44
7....	8+4	2.38
8....	8+7	2.30
9....	6+5	2.27
10....	7+5	2.25
11....	7+3	2.02
12....	8+8	1.98
13....	7+4	1.95
14....	8+3	1.94
15....	7+6	1.56
16....	3+3	1.46
17....	7+2	1.33
18....	5+3	1.31
19....	6+3	1.19
19....	9+2	1.19

TABLE III*B*

Rank	Combinations	No. of Children Making Errors	Percentage of Children Making Errors
1....	9+7	120	50.42
2....	9+3	109	45.80
3....	9+6	94	39.49
4....	8+5	91	38.23
5....	9+5	86	36.13
6....	7+6	79	33.19
6....	7+2	79	33.19
7....	8+3	74	31.09
8....	7+4	72	30.25
9....	8+8	71	29.83
10....	9+8	67	28.15
10....	8+7	67	28.15
11....	9+4	60	25.21
12....	5+2	59	24.79
13....	6+5	58	24.37
14....	8+4	52	21.85
14....	9+2	52	21.85
15....	7+5	48	20.17
15....	7+3	48	20.17
16....	6+3	44	18.48

TABLE III*C*

Rank	Combinations	No. of Children Making 2 or More Errors	Percentage of Children Making 2 or More Errors
1....	9+7	63	26.47
2....	9+3	59	24.79
3....	9+5	49	20.59
4....	8+5	47	19.75
5....	9+6	38	15.96
6....	7+4	37	15.55
7....	9+4	33	13.86
8....	8+3	32	13.44
9....	7+2	31	13.02
9....	8+7	31	13.02
10....	9+8	26	10.92
11....	7+6	25	10.50
11....	6+5	25	10.50
12....	8+8	24	10.08
13....	7+3	23	9.66
14....	8+4	21	8.82
14....	5+2	21	8.82
15....	7+5	20	8.40
16....	9+2	17	7.14
17....	8+6	15	6.30

From these tables it can be seen that there is a close correspondence in results, regardless of whether they are based on the number of times the combination was missed, on the number of children who missed it, or on the number who missed it two or more times.

It can also be seen that the higher combinations make the greatest showing of difficulty from all three points of consideration. The totals for the number of mistakes, the number of children who made them, and the number who made them repeatedly are all highest for the higher combinations.

The fact that the tests were repeated 25 times is significant in this connection. We may assume that any child might miss a combination once in 25 times on account of a slip of the pen or for some reason other than lack of knowledge of the combination, but it is not to be supposed that this would be done repeatedly. It may not be of the highest importance to note that 120 children out of 238 missed the combination 9+7, but it certainly is significant to know that 63 of them missed it two or more times. If an arbitrary standard were to be set up and it should be agreed that two or more errors in 25 chances on any combination should be taken to mean uncertainty concerning that combination, then it could be stated that from 6 per cent to 26 per cent of the children taking these tests were uncertain about some one or more of the twenty combinations included in the tables above. This would indicate that there are many children who make mistakes on the higher combinations because of lack of knowledge of them or uncertainty concerning them.

The errors on some of the combinations, especially on the ones and the doubles, seem to be out of proportion to the general indications of their difficulty, but this is because of the existence of certain *type errors*. Table IV shows the principal errors of this kind found in this study and indicates the explanation of the erratic showing of errors on certain of the combinations previously referred to.

One form of these errors is multiplication which is found mainly in the ones, though it is also found in certain other combinations. The 3+3 combination is a striking example of this. In three of the eight schools tested no other kind of mistake was made on it, while only 8 out of a total of 87 errors were due to any other cause. This kind of type error is not found in any other double, unless it is in the 2+2 where it makes no difference in the result.

In 8+8=18 a different form of type error is found which

accounts for nearly all of the mistakes made on the 8+8 combination. For example in School No. 7, 16 out of 28 children made this error one or more times.

TABLE IV

SHOWING PRINCIPAL TYPE ERRORS AS INDICATED BY THE NUMBER OF TIMES THE SAME MISTAKE WAS MADE IN EACH CASE

Combinations	School No. 1	School No. 2	School No. 3	School No. 4	School No. 5	School No. 6	School No. 7	School No. 8	Total
1+4=6.....	5	2	1	18	17	26	7	24	100
1+4=4.....	3	5	3	3	3	14	5	4	40
Miscellaneous....	0	1	3	3	2	3	0	2	14
1+6=6.....	19	9	4	11	11	11	17	11	93
1+6=8.....	3	4	0	3	7	3	3	2	25
Miscellaneous....	0	2	0	2	3	1	1	4	13
1+7=9.....	11	15	21	17	8	13	9	12	106
1+7=7.....	8	2	1	1	3	5	4	4	28
Miscellaneous....	2	0	0	1	1	1	3	2	10
2+7=7.....	4	5	5	6	9	14	13	31	87
2+7=8.....	1	11	3	4	2	8	6	3	38
2+7=11.....	0	0	0	0	3	4	2	6	15
Miscellaneous....	3	1	0	1	5	6	1	1	18
3+3=9.....	14	3	2	14	5	9	17	15	79
Miscellaneous....	1	1	0	1	0	3	2	0	8
3+9=11.....	34	24	13	12	25	35	41	27	211
3+9=13.....	2	18	0	4	5	4	3	2	38
3+9=9.....	10	2	3	2	8	3	5	9	42
Miscellaneous....	2	2	0	1	1	3	3	1	13
8+8=18.....	13	9	8	17	5	20	22	10	104
Miscellaneous....	1	2	0	3	1	2	3	2	14

The 9+3 combination also presents peculiar results. Theoretically, 9+3 should equal 13 as often as 11. Practically, it does not. In every school 11 is strongly the favorite error, while the total shows more than 5 to 1 in its favor.

Another point of interest is shown by Table V. It can be seen from this that there is a considerable difference in the number of errors made by the different groups, the average number per child varying from 15.60 in School No. 8 to 70.92 in School No. 2. It seems significant that there should be such a wide range, but the real importance of the table becomes apparent when it is noticed

that the school which had the *smallest number of errors* per pupil had the *slowest speed record*, and that the school which had the *largest number of errors* had the *highest record for speed.*

TABLE V

SHOWING AVERAGE NUMBER OF ERRORS PER PUPIL, AVERAGE NUMBER OF COMBINATIONS ATTEMPTED, AND RANK OF THE SCHOOLS ACCORDING TO SPEED AND ACCURACY

Schools	Average Number of Errors per Pupil	Rank Based on Accuracy	Average Number of Combinations per Pupil	Rank Based on Speed
1	19.57	4	69.77	5
2	70.92	8	76.08	1
3	21.07	5	71.78	3
4	23.56	6	70.13	4
5	18.76	3	73.75	2
6	17.67	2	62.04	7
7	29.50	7	68.50	6
8	15.60	1	59.82	8

From this table it is apparent that if the San Jose schools were ranked according to the number of combinations attempted in these tests and according to the errors made in the tests, the order of the schools would be almost reversed.

SUMMARY AND DISCUSSION OF RESULTS

In the introduction of this paper it was stated that this study was undertaken to find out how often errors are made on the combinations, what percentage of the group make them, how the combinations rank in difficulty, and what kind of mistakes are made on them. Something has been learned about all of these questions and the results have been presented in the foregoing tables and discussions. They may be summarized as follows:

1. Except in the zero combinations, where the errors were few, and in the ones where they were erratic because of the influence of type errors, *a fairly regular increase was found in the number of errors made and in the number of children making them as the combinations increased in size.* This finding indicates either that not enough attention has been given to the teaching of the higher combinations or that their inherent difficulty is greater than has been supposed. The fact in the case could be definitely determined

by experimentation, to the very great advantage of practice in teaching the combinations.

2. It was found that not only was there an increase in mistakes and the number of children making them as the combinations increased in size but that *a large percentage of the children* made mistakes on each of the larger combinations. On certain combinations from a *third* to a *half* made mistakes, while about half of this number made *two or more mistakes on the same combination*.

3. The rank in difficulty of the higher combinations is fairly well shown. For example, 9+7 was missed 3.32 per cent of the times it was attempted and 50.42 per cent of the children missed it. From this it can be seen that half of the children must have missed it, on the average, twice the percentage of the times credited to all. It can therefore be said that half the children taking these tests missed this combination about $6\frac{2}{3}$ per cent of the times they attempted it. Practically the same can be said of 8+5. A third or more missed 9+6, 9+3, and 9+5 an average of at least $7\frac{1}{2}$ per cent of their trials. And a fourth or more missed 9+8, 8+4, 8+7, 6+5, 7+5, 7+3, 8+8, and 7+4 an average of more than 7 per cent of their attempts. These results are derived from Tables III*A* and III*B* and, besides giving an idea of their relative difficulty, demonstrate rather clearly the lack of knowledge of the higher combinations.

4. It was found that *there were certain kinds of errors which were peculiar to certain combinations throughout all the schools tested.* These were called *type errors*. They were found to occur on several combinations and to account for a large part of the errors made on those combinations. Pedagogically, this finding is important, for, while the mere knowledge that a certain error is a *type* error may not suggest to the teacher the best method of dealing with it, it ought to prevent the ignoring of it as a slip of the pen or an accident.

In conclusion, the fact must be noted that some of the results found in this study are not in harmony with certain statements concerning tests of this kind that are widely known and relied upon. Reference is made here to two statements made by Courtis in his "Instructions for Making and Recording Scores" in giving

the Courtis Standard Tests. The first statement, which applies to four of eight of the Courtis Tests, is that "Ignorance is shown, not by incorrect answers, but by reduced speed." That is, he holds that speed and accuracy in such tests show a close positive correlation. In this study no such correlation was found. *The slowest group did the most accurate work and the fastest group made the most errors.* The second statement is that "Mistakes, except for the zero combinations, are very few." In this study, mistakes were found to be *fewest in the zero combinations and to gradually increase in number as the combinations increased in size*, with certain exceptions which have been noted. And, finally, the results of this study do not justify the ranking of groups by scoring their speed record without taking into account the errors made on the tests taken. On the other hand, they indicate that speed records alone may be unfair and sometimes directly opposed, as they were in some cases in this study, to the findings of a tabulation of errors.

BOOK REVIEWS

Francis W. Parker School Year Book, Vol. II, June, 1913, 198 pages, 54 illustrations. Francis W. Parker School, Chicago.

This volume, prepared by the faculty of the Francis W. Parker School, Chicago, deals with "The Morning Exercise As a Socializing Influence in the School." It is a distinctive contribution to the literature on social education, and gives a very vivid picture of certain phases of social education as they have been worked out in this school.

This publication is not of the character of the ordinary school reports, but consists of concrete, illustrated descriptions of different pieces of work in the school as they have actually been carried on. The Francis W. Parker School, being unhampered by traditions that beset the average school, and free to experiment in the carrying-out of educational theories, constitutes a sort of educational laboratory. Through the medium of the *Year Book*, the results of the experiments are given from year to year to the educational public.

One of the chief features of the work in this school is the utilization of the social motive in the teaching of the various subjects of the curriculum, and in all the activities of the children.

In the general school assembly, or "morning exercise," the children of the various grades and groups share their experiences and knowledge with the entire school through descriptions and summaries of the work they have been doing, their games, travel, etc. Here questions relating to the school community are worked out in the "town meeting," and other forms of exercises. The great floods of inspiration that go coursing through the school find their chief origin here. And through the morning exercises the big children and little, as well as the entire faculty, are brought together and their interests molded into those of one big family.

Volume II of the *Year Book* describes the morning exercises as they are conducted in the school. It contains a brief history of the morning exercise, an article on the purposes and values of the morning exercise, six articles showing concretely types of preparation of morning exercises that have been given in the school, verbatim reports of a large number of exercises, exercises for special days, a classified list of nearly three hundred typical exercises that have been given in the school, and other valuable material.

THE AUTHORS

Sixth Annual Report on the Medical Inspection of School Children in Dunfermline, 1911–12. By L. D. Cruikshank, M.D. Pp. 120. Published under Carnegie Dunfermline Trust by Turnbull & Spears, Edinburgh.

The public-school system of Dunfermline, Scotland, with a population of 5,417 school children showing a percentage of attendance of 90.2 is represented in this report. The medical service of these schools consists of inspection of the physical condition of the children, each child having a careful medical examination upon entrance, upon passing into the Senior division, at 11 years of age, and just before leaving school.

The examination includes height, weight, nutrition, cleanliness, the skin, adenoids, tonsils, glands, hearing, speech, mentality, heart and circulation, lungs, and nervous system. Special attention is given to tuberculosis and other infectious diseases, deformities, and the eyes.

After medical inspection, the case is followed up in the home by the school nurse and by the Civic Guild, a voluntary body organized to look after the social well-being of the citizens of Dunfermline, especially "the necessitous and suffering children." There were 556 such visits paid. When the routine school examination cannot be made sufficiently thorough, the child is sent to the School Clinic, where the case is studied in the medical, dental, or eye department. If there is no family physician the Clinic advises with the parents, teachers, or others directly interested in the child and institutes necessary treatment—the Clinic being equipped to provide medicine, to prescribe and furnish eye-glasses, and to handle orthopedic defects by special medical gymnastics in a department well appointed with Swedish apparatus for the work. Medical gymnastics is regarded as supplementary to the educational gymnastics which is systematically carried on in all the schools. Dunfermline is fortunate in the assistance of the Trustees of the Carnegie Fund, who have voted £20,000 for the establishment of a fully equipped School Clinic and College of Hygiene.

Careful survey is made of the school buildings by the architect and medical inspector with especial regard to overcrowding, sanitary conveniences, lavatories, drinking-water, cloak rooms, and the doors, desks, seats, gangways, heating, lighting, ventilation, and schoolroom apparatus of the classrooms and gymnasia.

The report urges the importance of providing experimental and open-air schools for the prevention of tuberculosis and its cure, emphasizing the battle note of modern medicine—prevention, and in conclusion raises the hygienic ideal for every growing child to that of "abundant health."

JOSEPHINE YOUNG

UNIVERSITY OF CHICAGO

The Newton Public Schools, Annual Report of Superintendent F. E. Spaulding to the School Committee. Published by the School Committee, Newton, Mass., 1912. Pp. 151. Paper.

The Annual Report of Mr. F. E. Spaulding, superintendent of the schools of Newton, Massachusetts, has just appeared. In this report, he not only holds to the high standard set by his reports for several years past, but here surpasses his own previous best work in many ways. So far as it goes—and as compared with the usual report it goes a very long way—it is a model of what a school report should be. It is a publicity message from the superintendent of the city schools to his constituency which shows simply, accurately, and clearly just what the schools are attempting, where the emphases are being placed, where the moneys are being expended, where economies are being attempted, and the plans that are being made for the future.

The report presents certain questions in terms that the layman can understand; it answers those that the superintendent is expected to answer, and presents the facts needed by the layman for answering the questions asked of him. Some of the questions are: What are the Newton schools trying to do? With what success? Do you approve their policy? Is it carried out economically? Is it administered efficiently? Can we afford to continue it? Can we afford not to continue it?

Mr. Spaulding prefaces the chapter which deals with the efficiency of the schools with a statement that is remarkable for its practical and scientific—the two are one—modernity:

"The progressive improvement of a school system demands that the following essentials of scientific management be applied incessantly: (1) the measurement and comparison of comparable results; (2) the analysis and comparison of conditions under which given results are secured—especially of the means and time employed in securing given results; (3) the consistent adoption and use of those means that justify themselves most fully by their results, abandoning those that fail so to justify themselves. The measurement of measurable educational results by suitable standards need limit those results to the dimensions of the standards no more than the measurement of a child's height limits his growth to the dimensions of the yard-stick."

As our profession carries out the implications of these principles, we shall during the process develop educational science to the degree that will permit for educational labor that of which we now hear much and see little, namely, scientific management.

J. F. BOBBITT

UNIVERSITY OF CHICAGO

BOOKS RECEIVED

MACMILLAN, NEW YORK

Everyday English. Book Two. By FRANKLIN L. BAKER and ASHLEY H. THORNDIKE. Cloth. Pp. 336. Illustrated.

The Way to the Heart of the Pupil. By DR. HERMANN WEIMER. Authorized Translation by J. REMSEN BISHOP and ADOLPH NEIDERPRUEM. Cloth. Pp. 178.

Moral Training in the School and Home. By E. HERSHEY SNEATH and GEORGE HODGES. Cloth. Pp. 219.

The Golden Deed Book (The Golden Rule Series). By E. HERSHEY SNEATH, GEORGE HODGES, and EDWARD LAWRENCE STEVENS. Cloth. Pp. 351. Illustrated.

The Idea of the Industrial School. By GEORG KERSCHENSTEINER. Translated by RUDOLF PINTNER. Cloth. Pp. 110. Price $0.50 net.

Stories of the Spanish Main. Adapted from FRANK R. STOCKTON'S *Buccaneers and Pirates of Our Coast.* Cloth. Pp. 232. Illustrated. Price $0.40 net.

RAND McNALLY & CO., NEW YORK

Lucita, A Child's Story of Old Mexico. By RUTH GAINES. Cloth. Pp. 127. Illustrated. Price $0.50.

Southern Literary Readings. Edited by LEONIDAS WARREN PAYNE, JR. Cloth. Pp. 501. Illustrated. Price $0.75.

HOUGHTON MIFFLIN CO., BOSTON

Eighth Reader (The Riverside Readers). By JAMES VAN SICKLE and WILHELMINA SEEGMILLER. Cloth. Pp. 310. Illustrated. Price $0.60.

The Home School (Riverside Educational Monographs). By ADA WILSON TROWBRIDGE. Cloth. Pp. 95. Price $0.60.

LAIRD & LEE, CHICAGO

Webster's New Standard Dictionary. Students' Common High-School Edition. Half Leather. Pp. 752.

Webster's New Standard Dictionary. High-School and Collegiate Edition. Flexible Leather. Pp. 1049. Illustrated. Price $3.50.

George Washington (Historic Americans Series). By EUGENE PARSONS. Cloth. Pp. 184. Illustrated. Price $0.75.

Thomas Jefferson (Historic Americans Series). By EDWARD S. ELLIS, A.M. Cloth. Pp. 180. Illustrated. Price $0.75.

Abraham Lincoln (Historic Americans Series). By ROBERT DICKINSON SHEPPARD, D.D. Cloth. Pp. 179. Price $0.75.

William McKinley (Historic Americans Series). By EDWARD T. ROE, LL.B. Cloth. Pp. 193. Illustrated. Price $0.75.

HENRY HOLT & CO., NEW YORK

Rhetoric and the Study of Literature. By ALFRED M. HITCHCOCK. Cloth. Pp. 410. Price $1.00.

CHARLES E. MERRILL CO., NEW YORK

Stories from the Far East. Translated and arranged by ROLAND G. KENT, PH.D., and I. FREEMAN HALL. Cloth. Pp. 153. Illustrated. Price $0.30.

THE CENTURY CO., NEW YORK

Arithmetic by Practice. By D. W. WERREMEYER. Cloth. Pp. 80.

PUTNAM, NEW YORK

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CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

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[1] *Abbreviations:*—Am. J. of Psychol., American Journal of Psychology; Am. Phys. Educa. R., American Physical Educational Review; Educa., Education; Educa. R., Educational Review; El. School T., Elementary School Teacher; Geographical T., Geographical Teacher; Harp. W., Harper's Weekly; J. of Educa. (Bost.), Journal of Education (Boston); J. of Educa. Psychol., Journal of Educational Psychology; J. of Home Econ., Journal of Home Economics; Lit. D., Literary Digest; Liv. Age, Living Age; Man. Train. M., Manual Training Magazine; Outl., Outlook; Pedagog. Sem., Pedagogical Seminary; Pop. Sci. Mo., Popular Science Monthly; Pri. Educa., Primary Education; Psychol. Clinic, Psychological Clinic; Relig. Educa., Religious Education; School R., School Review; School W., School World; Sci. Am., Scientific American; Teach. Coll. Rec., Teachers College Record; Tech. World M., Technical World Magazine; Voca. Educa., Vocational Education.

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